

Frequently Asked Questions on the Proposed Michigan Science Standards

Updated October 2, 2015

The following questions are gathered from email and phone communications, the public comment survey, and comments shared during the public information sessions or conference presentations on the proposed Michigan K-12 Science Standards. This list is not the complete list of questions, but rather, a list that identified commonly asked questions (which have been synthesized into single questions from the multiple comments received) that need some additional clarification. MDE will continue to add to this list during the public comment period, and will develop this list into appropriate guidance in the event of adoption of the proposed standards.

About the Standards Development and Review Process

1. Why didn't Michigan just update the science standards instead of developing a completely new set of standards?

The current science standards were adopted by the State Board of Education in 2006. Typically, Michigan has undergone a review/update of standards every 5-7 years to utilize new concepts, research findings, and feedback from educators. In 2010, Michigan had the opportunity to become a lead state in a multi-state standards development effort, which became the Next Generation Science Standards. This effort allowed for a re-visioning of standards based upon data on student learning and current practices in business, industry, and scientific research.

2. Who created the Michigan Science Standards? Who was involved in the process?

The development process occurred in four stages (initial development and two review and modification cycles, and a final modification cycle that was used to transition from the Next Generation Science Standards to the Michigan Science Standards). The development teams were largely comprised on science education specialists from around the country, including two lead developers, plus educators, educational administrators, and scientists from higher education, business, and industry. Review teams were largely comprised of educational leaders in science education, including many Michigan teachers, professional development specialists in science education, higher education faculty, and curriculum leaders from school districts and intermediate school districts (ISDs). Michigan had greater representation than any other participating state, with 66 participants in the project.

3. Is this the "Common Core" for science? Are these standards mandated by the federal government?

No. While the initial effort of developing the Next Generation Science Standards involved multiple states, there are a variety of differences between the Common Core and the proposed Michigan Science Standards. The standards went through multiple review processes with the public, and were developed utilizing the research-based Framework for K-12 Science Education. Also, there are no assessment consortia specific to the science standards, and there is no federal involvement in Michigan's decision to adopt a specific set of science standards, nor was there federal sponsorship of the development of these standards.

4. When does the public, including parents, community members, teachers, and others get to provide input on the standards?

When the standards were being developed, there were two web-based public comment periods which were used to provide feedback on the standards. Over 200,000 unique visitors viewed the standards during these periods. Michigan solicited public comment in April 2013 when the standards were being considered for adoption as the Next Generation Science Standards. Hundreds of responses were gathered at that time from teachers, state leaders, scientists, the business community, and parents and students during that time. Now, after redevelopment of the standards as Michigan Science Standards (see item below), the standards are once again open to public comment, which includes a web-based survey, as well as gathering of comments from public information sessions and conference presentations. If any changes are made to the standards following this, a final review period will be held prior to adoption.

5. How were the standards made into “Michigan Science Standards”? Why was this done?

Three specific modifications have been made to the standards that were originally published in 2013 as the Next Generation Science Standards to the standards that are now proposed as new Michigan K-12 Science Standards. First, the Michigan Science Standards were created from the selection of the individual student performance expectations from the NGSS documents, so that ancillary information that was not relevant to the standards was separate from the document that is proposed for adoption. This gives added flexibility to modify or provide additional guidance separate from that identified as the Next Generation Science Standards. Because the State Board of Education would need to implement another full review process if any changes were made to guidance that was included in the adopted standards document, this process removes this barrier to any eventual modification, and also ensures that any modifications to NGSS would not inadvertently change our standards. Second, Michigan specific contexts were added to relevant standards to focus on unique scientific considerations related to Michigan’s geology and weather and to the Great Lakes. Finally, notation is provided that cites opportunities for educators to utilize local, regional, or state resources identified by educator organizations or MDE.

About the Role of Standards in Education and in Local Schools

6. What are “standards”? What is the role of standards?

Content standards are the common expectations of what students should be able to do with respect to the content they are addressing. They are commonly a list of performance tasks that students should be able to do to demonstrate understanding of the content they address.

7. How are standards tied to curriculum?

Content standards are not curriculum. As mentioned above, they are simply the performance standards that students should be able to demonstrate in a specific subject by a specific grade level. They drive decisions that local school districts make about their curriculum, but they are not the curriculum itself. School districts and educators should develop their own curriculum and identify resources and instructional strategies they want to use to make sure that students are able to meet the expectations of the standards.

8. How do teachers use the standards in their classroom?

Because the standards outline the common expectations for all students, educators are expected to use the standards to determine what outcomes are expected around specific content areas. Educators then use these standards to map out learning activities, assessments, and content topics for their district, building, and classroom in order to ensure that students can meet the standards for their grade level or band. As mentioned above, the standards are not curriculum, nor do they point to specific curriculum or learning activities. Educators should examine their own lessons, instructional resources, course descriptions, and curricula to determine how instruction will allow students to accomplish the performance expectations. Educational leaders should review the standards with respect to local district or building decisions, such as teacher placement and preparation, curriculum, instructional resources, assessments, and course sequences to make system adjustments to ensure these infrastructure elements align with the standards. Likewise, they should review student achievement data to ensure that students are accomplishing the standards, and where not, make changes in the infrastructure to ensure that students can accomplish the standards. This may also include establishing professional learning supports to ensure that teachers are prepared to address standards, and to monitor student progress toward meeting these standards that can inform policy and implementation.

9. Who adopts the standards? What role does the legislature have in this? MDE?

It is the constitutional responsibility of the State Board of Education to adopt academic standards for students in Michigan’s public schools. The State Board of Education is an elected body that is independent of the governor or legislature. The legislature is able to enact laws regarding other academic considerations and requirements, and they also determine the budget for school state aid, which can provide funding for specific programs or priorities. The Michigan Department of Education (MDE) works to support implementation of federal and state law regarding schooling, as well as academic standards and related work adopted by the State Board of Education. MDE provides technical assistance and guidance to support implementation of the standards, and implements activities that utilize the standards, such as statewide student assessment or teacher certification requirements.

About the New Topics and Differences in Michigan Science Standards

10. How do new standards improve upon the current Grade Level Content Expectations (GLCE's) and High School Content Expectations (HSCE's) of our current standards?

The proposed Michigan Science Standards still focus on disciplinary content in the sciences, but have a number of new components that represent improvements, including:

- The proposed standards were based on over thirty years of research on science education, as well as current practices and expectations of higher education institutions and business and industry addressing science and engineering concepts and practices.
- The existing standards in Michigan (the GLCE's and HSCE's) primarily address content understandings at a basic level, where students would be expected to describe or explain science concepts. The proposed standards ask students to be able to apply concepts, investigate phenomena, and solve problems – all higher level thinking skills.
- The proposed standards were developed with learning progressions in mind, drawing upon research on how learners develop greater understanding of concepts over time, and that these are developmentally appropriate for learners based on grade level.
- The proposed standards focus on more authentic understandings and applications of science concepts in ways that support better student engagement, learning of concepts, and recognition of career paths in the sciences and engineering.

Michigan contracted with a third-party evaluator (SRI International) to examine the differences between the current and proposed standards, and to develop recommendations based on the evaluation. The evaluation recommended adoption and implementation of the proposed standards for a variety of reasons, and identified five specific recommended actions around the proposed standards. This document can be found on the MDE website for the proposed Michigan Science Standards (<http://mi.gov/science>).

11. What is new in the proposed standards?

The Michigan Science Standards address science content, but also include *cross-cutting ideas* from multiple science disciplines, and *practices of science*, such as investigation and data analysis. For the first time, the Science Standards also address Engineering Practices and Design. These are meant to include engineering into science instruction, and address the need for students to be acquainted with engineering practices and principles as a part of their broader learning in science.

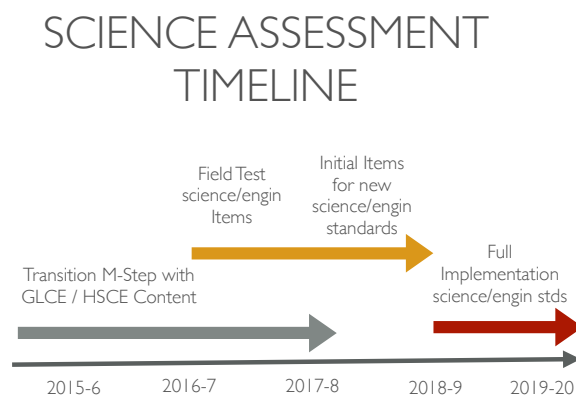
12. How are the Science Standards different from STEM Standards or Requirements?

While the new standards address science and engineering, they should not be considered “STEM standards.” STEM learning implies an integrated approach to the fields of science, technology, engineering, and mathematics. There are already existing mathematics standards and technology standards, which are separate from (but aligned to) the science standards. Michigan does not have “STEM Standards” per se to address the integration of these four areas, but rather, has standards in each of these four areas.

About Assessment of Michigan Science Standards

13. When would new standards be assessed on the M-Step assessment?

State level assessments typically lag behind new standards adoption in that it takes considerable time to develop new assessments. For any adoption of new standards, MDE would first go through the test item bank to determine if any items need to be removed or adjusted because of changes in the standards, and this would typically be done in the coming year, as shown in the gray arrow at right. That would mean that items on the 2016-17 M-Step would be aligned to the new standards, but would likely not be fully representative of those standards, in that they would align by content strand and grade level/band, but would not incorporate practices or cross-cutting concepts that might address greater depth of knowledge of content. To be fully aligned, including new assessment items addressing science and engineering practices and cross-cutting concepts, these are likely to be included by 2019 or 2020, as illustrated by the red arrow in the timeline diagram.



14. How will new assessment items be created to address the standards?

All new assessment items are created by Michigan teachers. MDE regularly invites teachers who have volunteered to participate in assessment development to participate in item development sessions to create items aligned to specific standards. The items are then reviewed by MDE staff and entered into a field test pool of questions. Field tests are done every year with about 15% or less of the items, and are not counted on a student's score, but their answers are used to determine if the item was appropriate for general use. Successful field test items are incorporated into the assessment items if they meet a number of outcome and answer distribution thresholds.

15. When will the M-Step fully align to proposed standards?

As shown in the diagram above, the M-Step should be fully aligned by the 2018-19 or 2019-20 school year at the latest, when it includes not only relevant content-focused items by grade band, but also includes tasks that require greater understanding of science practices and cross-cutting concepts.

16. With the grade band configuration of the standards at middle and high school, when would science be assessed in these grades? How will this accommodate the structure of the grade bands?

The current plan would be to transition the science assessment to the end of 5th and 8th grades, and keep the high school assessment at 11th grade. This would accommodate the grade band configuration of the proposed standards. This change would likely start in spring 2017.

FAQ version 2 concludes here. FAQ version 3 will address the following questions, and should be posted by October 12, 2015.

17. Are there vendor assessments for local schools to use that are aligned to the standards?

18. How can we deal with student growth measures required by educator evaluation policies?

About Teacher Preparation, Professional Development, and Certification to Support Use of Michigan Science Standards

19. Will MDE or other groups be providing professional development to teachers to address the new standards?

20. Will new standards result in changes to teacher preparation? If so, how?

21. How will teacher preparation and certification address the inclusion of engineering, integrated content, and cross-cutting practices?

About Funding to Support Use of Michigan Science Standards

22. What added costs are anticipated to address new standards?

23. Who is going to pay for implementation of new standards?

24. Will new standards that incorporate engineering practices require additional equipment, such as FIRST Robotics kits and other expensive materials for schools?

About Educator Guidance to Support Use of Michigan Science Standards

25. What guidance will be provided to support implementation of new standards?

26. How will changes be made to guidance materials for the Michigan Science Standards?

27. Can our school use resources for NGSS, or do they need to specifically support Michigan Science Standards?

28. Why isn't Michigan just adopting NGSS and all of the related resources?

About School Level Implementation of Michigan Science Standards

29. What steps should local school districts take to implement the new standards?

30. Are there models for how schools should redesign their curriculum or course descriptions?

31. Our school is in the process of selecting new textbooks – should we wait, or should we look for textbooks that incorporate NGSS standards?